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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/686,389	10/14/2003	Young Han Nam	KIM-10113	6308

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EXAMINER	
SIEDLER, DOROTHY S	
ART UNIT	PAPER NUMBER
2626	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/13/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/686,389	NAM ET AL.	
	Examiner	Art Unit	
	Dorothy Sarah Siedler	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3-26-04,1-13-06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This is the initial response to the application filled October 14, 2004. Claims 1-6 are pending and are considered below.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1,2,4 and 6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 2 recite the limitation "the characteristic". There is insufficient antecedent basis for this limitation in the claim. The examiner interprets "the characteristic" to be "a characteristic", therefore any characteristic of the signal can be used to classify the audio data. This interpretation is used throughout the remainder of this office action.

In addition, claims 4 and 6 recite the limitation "low bit". There is insufficient antecedent basis for this limitation in the claim. The examiner interprets "low bit" as "low bit rate". This interpretation is used throughout the remainder of this office action.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by ***Benyassine*** (6,694,293).

As per claim 1, ***Benyassine*** discloses a method for preprocessing audio data to be processed by a codec having variable coding rate, comprising the steps of: classifying the audio data based on the characteristic (a characteristic) of the audio data (column 5 lines 27-37, *a input speech signal frame is compared to a threshold to classify it as noise or not)*; and preprocessing frames of audio data selected based on the classification (column 5 lines 49-55, *a second set of feature parameters are determined to be used to classify the frame as speech or music*).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over ***Benyassine*** in view of ***Malvar*** (6,029,126).

As per claim 4, ***Benyassine*** discloses a method for preprocessing audio data to be processed by a codec having variable coding rate, comprising the steps of: deciding an interval of audio data that is to be encoded in a low bit rate in said codec (column 1 lines 55-57 and column 5 lines 27-37, *a noise frame is classified, then encoded at a lower bit rate since it is a less important part of speech*). ***Benyassine*** does not explicitly disclose adjusting the amplitude of audio data of the decided interval, such that the audio data in the interval may not be encoded in said low bit (low bit rate). However, ***Benyassine*** does disclose that previous speech coding systems do not correctly determine when a music signal is input (column 2 lines 4-7), often mistaking it for a less important part of speech, such as noise, thus encoding the signal at a lower bit rate. In addition, ***Benyassine*** discloses that frame energy, or any other parameter used to distinguish noise, can be used to classify the input signal (column 5 lines 30-33). In addition, ***Malvar*** discloses that signal enhancement functions are used to enhance a signal prior to processing by the codec, automatic gain control being one of those functions (column 2 lines 41-51). The enhancement functions are used to transform the signal in order to increase encoding accuracy.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to adjust the amplitude (enhancement) of the audio data in

Benyassine, in order to distinguish the music signal from noise then correctly encode the frame at a higher bit rate, thus reducing encoding errors and increasing resolution once it is decoded.

As per claim 5, ***Benyassine*** in view of ***Malvar*** discloses a method in accordance with claim 4, and ***Benyassine*** further discloses wherein the adjusting step comprises the steps of: calculating signal levels of the audio data (column 5 lines 30-33, *first signal parameters*). ***Benyassine*** does not disclose deciding smoothed gain coefficients based on signal levels, and generating preprocessed audio data by multiplying the smoothed gain coefficients to the audio data in the decided interval. However, ***Benyassine*** does disclose that previous speech coding systems do not correctly determine when a music signal is input (column 2 lines 4-7), often mistaking it for a less important part of speech, such as noise, thus encoding the signal at a lower bit rate. In addition, ***Benyassine*** discloses that frame energy, or any other parameter used to distinguish noise, can be used to classify the input signal (column 5 lines 30-33). In addition, ***Malvar*** discloses that signal enhancement functions are used to enhance a signal prior to processing by the codec, automatic gain control being one of those functions (column 2 lines 41-51). The enhancement functions are used to transform the signal in order to increase encoding accuracy.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to determine gain coefficients, and multiply those coefficients by the

input signal in ***Benyassine***, in order to distinguish the music signal from noise then correctly encode the frame at a higher bit rate, thus reducing encoding errors and increasing resolution once it is decoded.

As per claim 6, ***Benyassine*** discloses an apparatus for providing audio data encoded by a codec having variable encoding rate, comprising: means for deciding an interval of audio data that is to be encoded in a low bit rate by said codec (column 1 lines 55-57 and column 5 lines 27-37, *a noise frame is classified, then encoded at a lower bit rate since it is a less important part of speech*). ***Benyassine*** does not explicitly disclose means for adjusting the amplitude of audio data of the decided interval, such that the audio data in the interval may not be encoded in said low bit (low bit rate). However, ***Benyassine*** does disclose that previous speech coding systems do not correctly determine when a music signal is input (column 2 lines 4-7), often mistaking it for a less important part of speech, such as noise, thus encoding the signal at a lower bit rate. In addition, ***Benyassine*** discloses that frame energy, or any other parameter used to distinguish noise, can be used to classify the input signal (column 5 lines 30-33). In addition, ***Malvar*** discloses that signal enhancement functions are used to enhance a signal prior to processing by the codec, automatic gain control being one of those functions (column 2 lines 41-51). The enhancement functions are used to transform the signal in order to increase encoding accuracy.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to enhance (adjust the amplitude) of the audio data in ***Benyassine***, in order to distinguish the music signal from noise then correctly encode the frame at a higher bit rate, thus reducing encoding errors and increasing resolution once it is decoded.

Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over ***Benyassine*** in view of ***Malvar*** further in view of ***Davis*** (4,539,526).

As per claim 2, ***Benyassine*** discloses a method for preprocessing audio data to be processed by a codec having variable coding rate, comprising the steps of: classifying the audio data based on the characteristic (a characteristic) of the audio data (column 5 lines 27-37, *a input speech signal frame is compared to a threshold to classify it as noise or not).* However, ***Benyassine*** does not disclose in case the audio data includes monophonic sound, performing AGC (automatic gain control) preprocessing of all frames; and in case the audio data includes polyphonic sound, performing AGC preprocessing of selected frames. ***Malvar*** discloses that signal enhancement functions are used to enhance a signal prior to processing by the codec, automatic gain control being one of those functions (column 2 lines 41-51). The enhancement functions are used to transform the signal in order to increase encoding accuracy. In addition, ***Davis*** discloses a system that performs preemphasis on a signal prior to encoding or

decoding, that preemphasis based on a ratio of high frequency energy to low frequency energy (column 2 lines 50-67). ***Davis*** also discloses that conventionally, preemphasis is used to adjust a signal level to below a maximum level or above a noise level. Monophonic music, having one tone or pitch, would have a constant ratio of high frequency energy to low frequency energy; therefore any preemephasis needed would take place over every frame of the signal. Polyphonic music would have a ratio of high frequency energy to low frequency energy that varies, depending on the tones being played at that time. The amount of preemphasis needed would depend on the tones being played during a particular frame.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to adjust the gain for all frames in monophonic music and selected frames in polyphonic music in ***Benyassine*** and ***Malvar***, in order to adjust the signal to below a maximum level and above a minimum noise level, thus reducing errors in a bandlimited application, such as encoding and decoding prior to transmission, as indicated in ***Davis*** (column 1 lines 31-36 and column 2 lines 46-65).

As per claim 3, ***Benyassine*** discloses a method in accordance with claim 2, but does not explicitly disclose wherein the step of performing AGC preprocessing of selected frames include deciding whether a frame in the audio data includes noise signal or not. However, ***Benyassine*** does disclose determining whether an input signal is noise or not (column 5 lines 27-37, *a input speech signal frame is compared to a threshold to*

classify it as noise or not), that signal then used to extract secondary parameters for a second classification. In addition, ***Malvar*** discloses that signal enhancement functions are used to enhance a signal prior to processing by the codec, automatic gain control being one of those functions (column 2 lines 41-51). The enhancement functions are used to transform the signal in order to increase encoding accuracy.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to determine if an input frame is noise or not during AGC preprocessing in ***Benyassine,*** in order to distinguish the music signal from noise, then correctly encode the frame at a higher bit rate, thus reducing errors and increasing resolution once it is decoded.

TALIVALDIS IVARS ŠMITS
PRIMARY EXAMINER

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Kunugi (4,644,292) discloses an automatic gain control unit
- Cellario (6,108,626) discloses a system encodes audio sources depending on their classification.
- Choy (6,324,505) discloses a system that determines gain factors for each frame during coding.
- Gao (6,842,733) discloses a system that preprocesses speech prior to coding.
- Gao (6,850,884) discloses a system that selection of coding parameters to achieve enhanced quality.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dorothy Sarah Siedler whose telephone number is 571-270-1067. The examiner can normally be reached on Mon-Thur 9:30am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on 571-272-7602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DSS